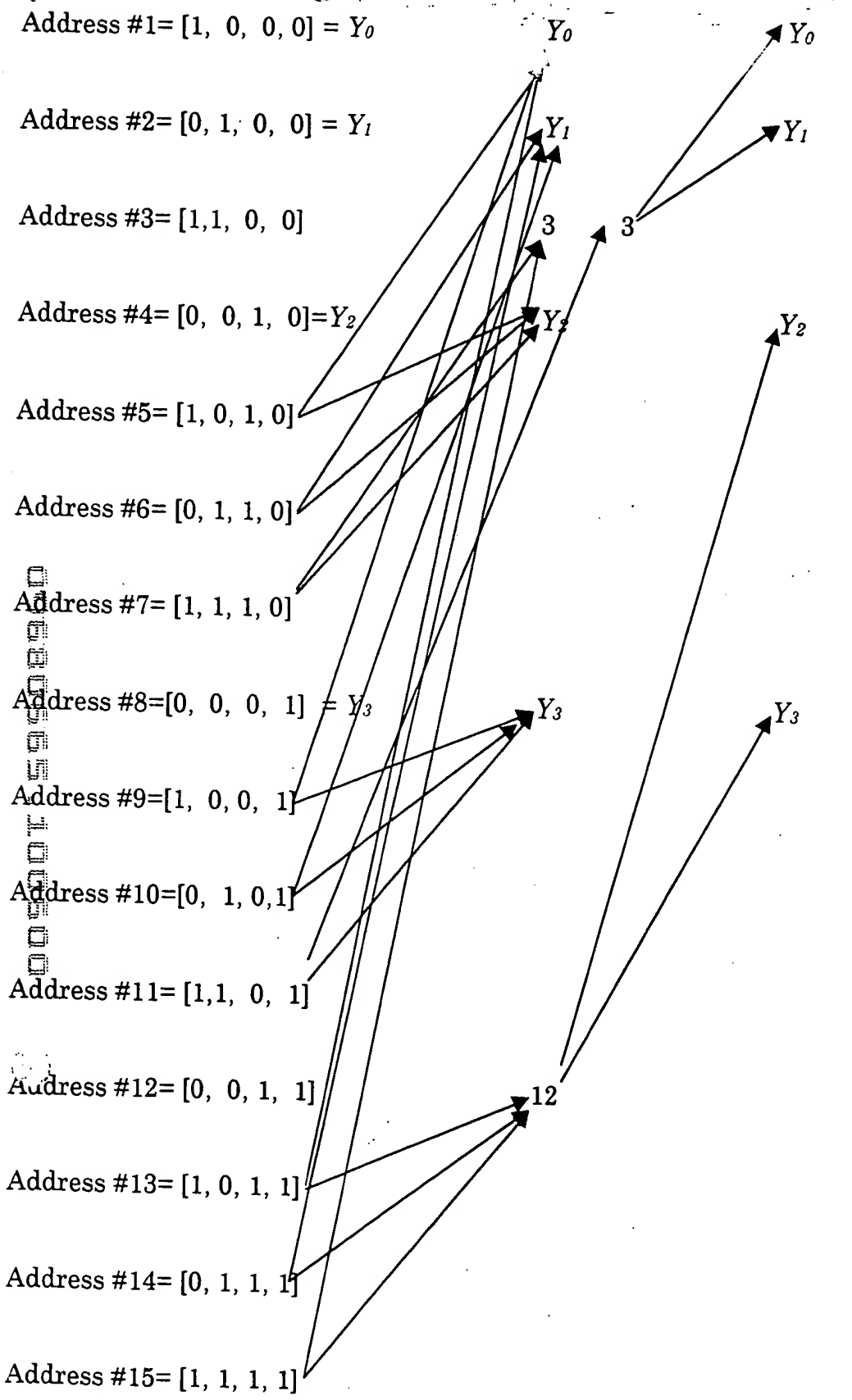
Address #1= [1, 0, 0, 0] = Y0
Address #2= [0, 1, 0, 0] = Y1
Address #3= [1,1, 0, 0]
Address #4= [0, 0, 1, 0]=Y2
Address #5= [1, 0, 1, 0]
Address #6= [0, 1, 1, 0]
Address #7= [1, 1, 1, 0]
Address #8=[0, 0, 0, 1] = Y3
Address #9=[1, 0, 0, 1]
Address #10=[0, 1, 0,1]
Address #11= [1,1, 0, 1]
Address #12= [0, 0, 1, 1]
Address #13= [1, 0, 1, 1]
Address #14= [0, 1, 1, 1]
Address #15= [1, 1, 1, 1]
Y0
Y1
3
Y2
Y3
12
Y0
Y1
3
Y2
Y3

Fig. 1

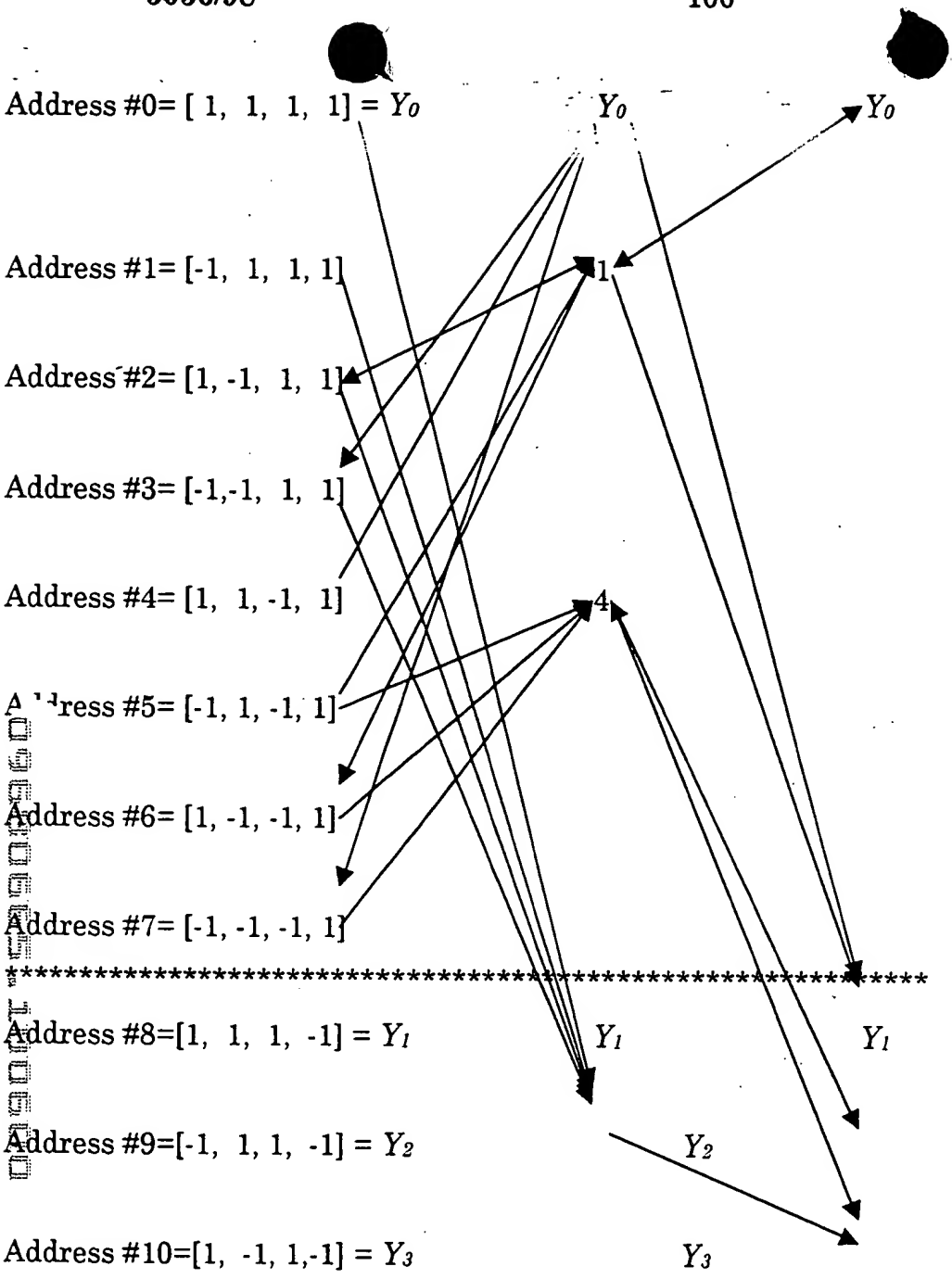

Fig. 2

Example 3: U_1 - Matrix

The following sequence of steps describes an implementation of the GEM method in the case where the entries of the transformation matrix belong to the set U_1

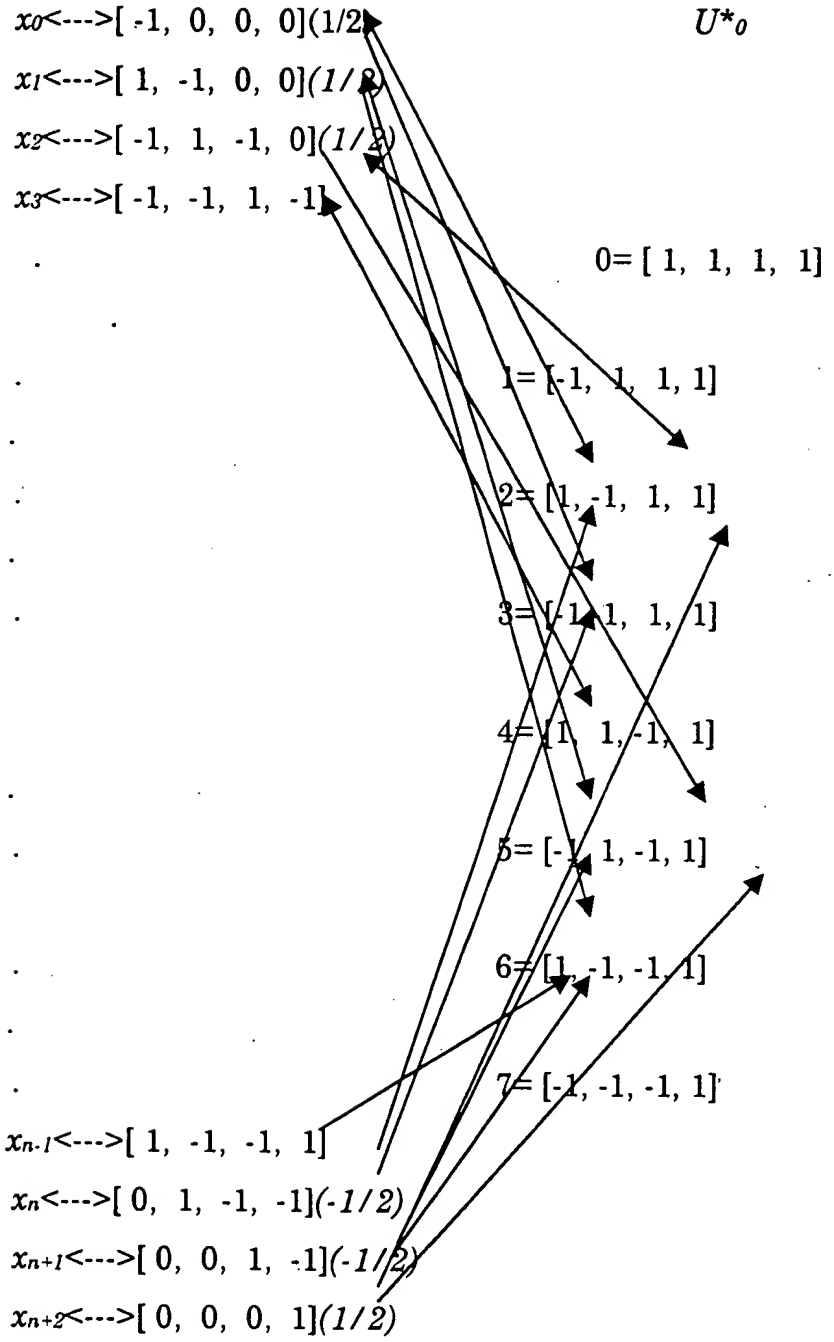
x_0<--->[-1, 0, 0, 0](1/2)
x_1<--->[1, -1, 0, 0](1/2)
x_2<--->[-1, 1, -1, 0](1/2)
x_3<--->[-1, -1, 1, -1]
U^*_0
0= [1, 1, 1, 1]
1= [-1, 1, 1, 1]
2= [1, -1, 1, 1]
3= [-1, -1, 1, 1]
4= [1, 1, -1, 1]
5= [-1, 1, -1, 1]
6= [1, -1, -1, 1]
7= [-1, -1, -1, 1]
x_{n-1}<--->[1, -1, -1, 1]
x_n<--->[0, 1, -1, -1](-1/2)
x_{n+1}<--->[0, 0, 1, -1](-1/2)
x_{n+2}<--->[0, 0, 0, 1](1/2)

Fig. 3

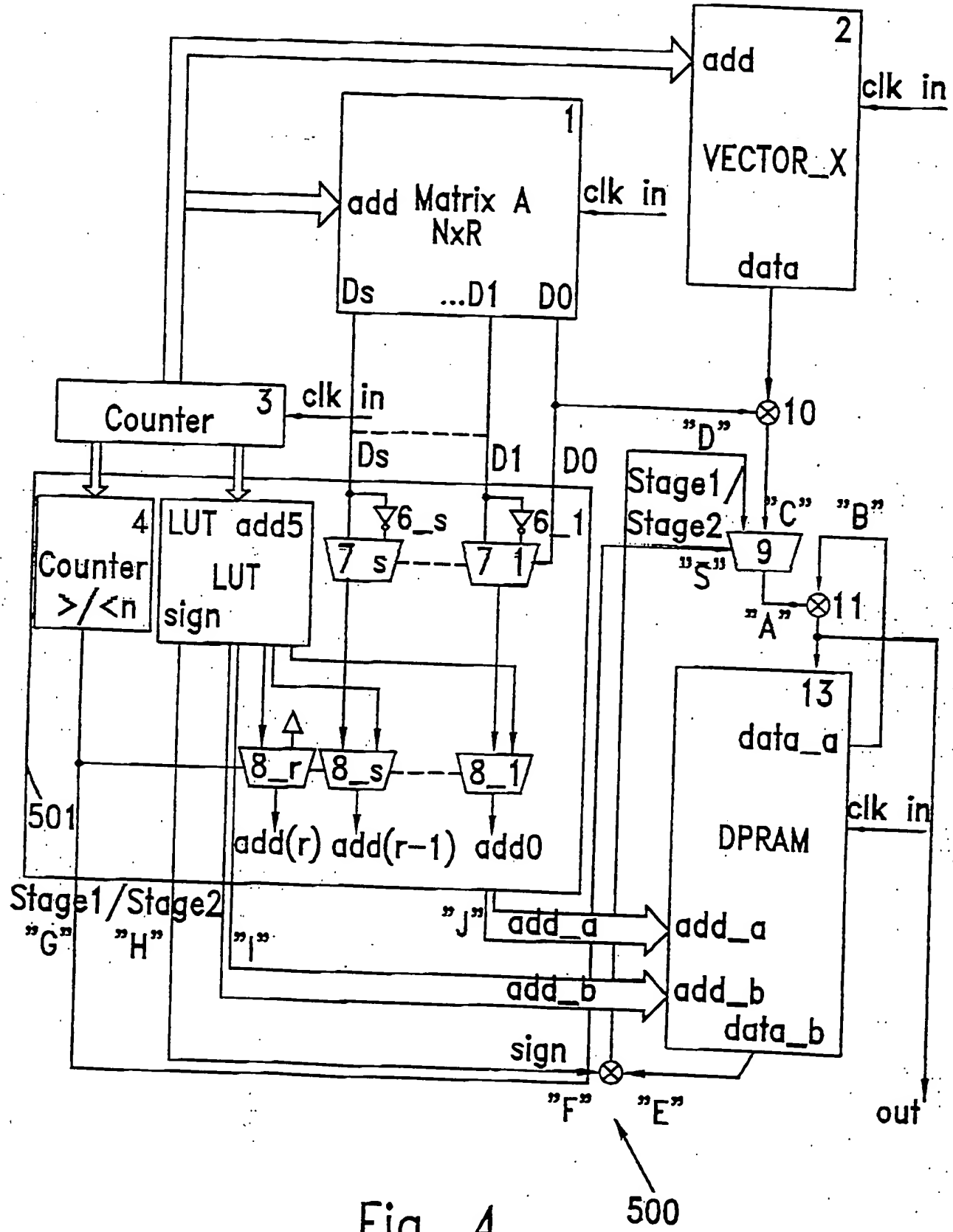
2
add
clk in
VECTOR_X
data
1
add Matrix A
NxR
clk in
Ds ...D1 D0
Counter 3
clk in
10
"D"
Ds D1 D0
Stage1/
Stage2
"C"
"B"
9
"S"
"A"
11
4
Counter
>/<n
LUT add5
LUT
sign
6_s
6_1
7_s
7_1
13
data_a
clk in
DPRAM
8_r
8_s
8_1
501
add(r) add(r-1) add0
Stage1/Stage2
"G"
"H"
"I"
"J"
add_a
add_a
add_b
add_b
data_b
sign
"F"
"E"
out
500

Fig. 4

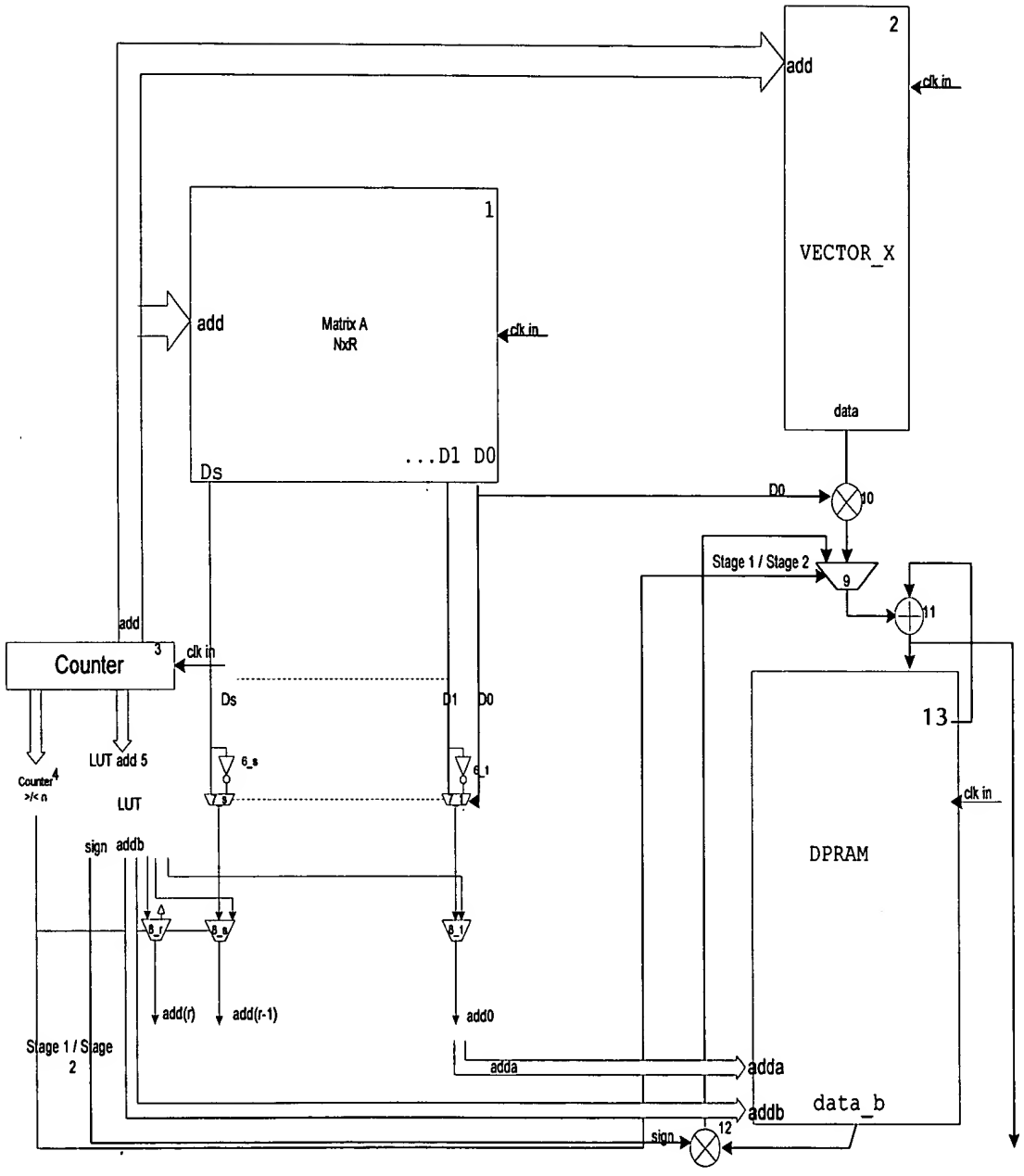
2
add
clk in
VECTOR_X
data
1
add
Matrix A
NxR
clk in
...D1 D0
Ds
D0
10
Stage 1 / Stage 2
9
11
add
Counter
3
clk in
Ds
D1
D0
13
LUT add 5
6_s
6_1
Counter
>/< n
4
LUT
clk in
DPRAM
sign
addb
8_1
8_s
8_1
add(r)
add(r-1)
add0
Stage 1 / Stage
2
adda
adda
addb
data_b
sign
12

Figure 5